

CLAIMS

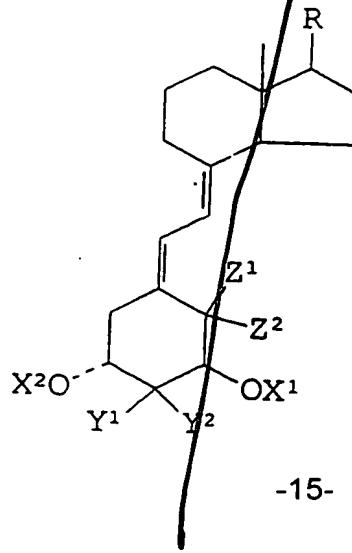
We claim:

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1. A method of delaying the onset of diabetes in a human patient, comprising the step of orally administering to the patient an effective amount of a vitamin D compound such that the onset of diabetes or diabetes symptoms is slowed.

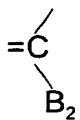
2. The method of claim 1 wherein the compound is selected from the group consisting of 1 α ,25-dihydroxyvitamin D₃ (1,25-(OH)₂D₃), 19-nor-1,25-dihydroxyvitamin D₂ (19-nor-1,25-(OH)₂D₃), 24-homo-22-dehydro-22E-1 α ,25-dihydroxyvitamin D₃ (24-homo-22-dehydro-22E-1,25-(OH)₂D₃), 1,25-dihydroxy-24(E)-dehydro-24-homo-vitamin D₃ (1,25-(OH)₂-24-homo D₃), 19-nor-1,25-dihydroxy-21-epi-vitamin D₃ (19-nor-1,25-(OH)₂-21-epi-D₃), 1 α hydroxy vitamin D₃ or 1 α hydroxy vitamin D₂.

3. The method of claim 1 wherein the vitamin D compound is selected from the group consisting of vitamin D compounds with the following formula:

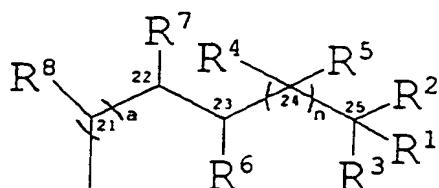


wherein X^1 and X^2 are each selected from the group consisting of hydrogen and acyl; wherein Y^1 and Y^2 can be H, or one can be 0-aryl, 0-alkyl, aryl, alkyl of 1-4 carbons, taken together to form an alkene having the structure

of B1



where B_1 and B_2 can be selected from the group consisting of H, alkyl of 1-4 carbons and aryl, and can have a β or α configuration; $Z^1=Z^2=H$ or Z^1 and Z^2 together are $=CH_2$; and wherein R is an alkyl, hydroxyalkyl or fluoroalkyl group, or R may represent the following side chain:



wherein (a) may have an S or R configuration, R¹ represents hydrogen, hydroxy or O-acyl, R² and R³ are each selected from the group consisting of alkyl, hydroxyalkyl and fluoralkyl, or, when taken together represent the group-(CH₂)_m-wherein m is an integer having a value of from 2 to 5, R⁴ is selected from the group consisting of hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoralkyl, wherein if R⁵ is hydroxyl or fluoro, R⁴ must be hydrogen or alkyl, R⁵ is selected from the group consisting of hydrogen, hydroxy, fluorine, alkyl, hydroxyalkyl and fluoroalkyl, or R⁴ and R⁵ taken together represent double-bonded oxygen, R⁶ and R⁷ taken together form a carbon-carbon double bond, R⁸ may be H or CH₃, and wherein n is an integer

having a value of from 1 to 5, and wherein the carbon at any one of positions 20, 22, or 23 in the side chain may be replaced by an O, S, or N atom.

4. The method of claim 1 wherein the oral administration is via diet.

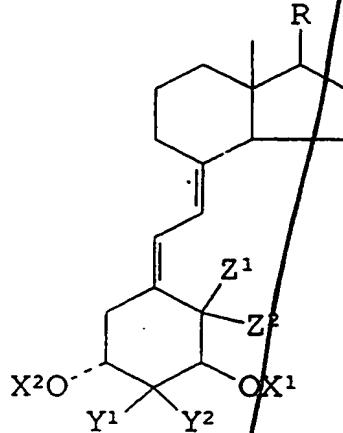
5. The method of claim 1 wherein the oral administration is at the concentration of between 0.005 μ g to 0.2 μ g per kilogram of patient weight per day.

6. A method of reducing the severity of diabetes symptoms comprising orally administering to a human diabetes patient an effective amount of vitamin D compounds such that diabetes symptoms are lessened.

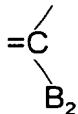
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7. The method of claim 6 wherein the compound is selected from the group consisting of 1 α ,25-dihydroxyvitamin D₃ (1,25-(OH)₂D₃), 19-nor-1,25-dihydroxyvitamin D₂ (19-nor-1,25-(OH)₂D₃), 24-homo-22-dehydro-22E-1 α ,25-dihydroxyvitamin D₃ (24-homo-22-dehydro-22E-1,25-(OH)₂D₃), 1,25-dihydroxy-24(E)-dehydro-24-homo-vitamin D₃ (1,25-(OH)₂-24-homo D₃), 19-nor-1,25-dihydroxy-21-epi-vitamin D₃ (19-nor-1,25-(OH)₂-21-epi-D₃), 1 α hydroxy vitamin D₃ or 1 α hydroxy vitamin D₂.

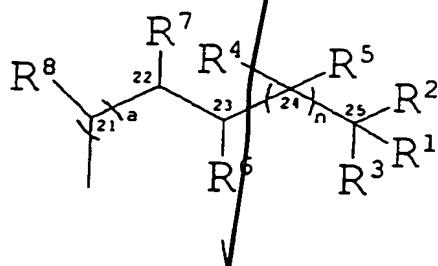
8. The method of claim 6 wherein the vitamin D compound is selected from the group consisting of vitamin D compounds with the following formula:



wherein X^1 and X^2 are each selected from the group consisting of hydrogen and acyl; wherein Y^1 and Y^2 can be H or one can be 0-aryl, 0-alkyl, aryl, alkyl of 1-4 carbons, taken together to form an alkene having the structure of B_1 , where B_1 and B_2 can be selected from the group consisting of H,



alkyl of 1-4 carbons and aryl, and can have a β or α configuration; $Z^1=Z^2=H$ or Z^1 and Z^2 together are $=CH_2$; and wherein R is an alkyl, hydroxyalkyl or fluoroalkyl group, or R may represent the following side chain:



wherein (a) may have an S or R configuration, R¹ represents hydrogen, hydroxy or O-acyl, R² and R³ are each selected from the group consisting of alkyl, hydroxyalkyl and fluoralkyl, or, when taken together represent the group-(CH₂)_m-wherein m is an integer having a value of from 2 to 5, R⁴ is selected from the group consisting of hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoralkyl, wherein if R⁵ is hydroxyl or fluoro, R⁴ must be hydrogen or alkyl, R⁵ is selected from the group consisting of hydrogen, hydroxy, fluorine, alkyl, hydroxyalkyl and fluoroalkyl, or R⁴ and R⁵ taken together represent double-bonded oxygen, R⁶ and R⁷ taken together form a carbon-carbon double bond, R⁸ may be H or CH₃, and wherein n is an integer having a value of from 1 to 5, and wherein the carbon at any one of positions 20, 22, or 23 in the side chain may be replaced by an O, S, or N atom.

9. The method of claim 6 wherein the oral administration is via diet.

10. The method of claim 6 wherein the oral administration is at the concentration of between 0.005 µg to 0.2 µg per kilogram of patient weight per day.